

Non-CO₂ Greenhouse Gases: Methane

Source/Sectors: Natural Gas Systems (Field Production; Processing; Transmission)

Technology: Replace high-bleed pneumatic devices with low-bleed pneumatic devices (A.1.2.1.4; A.1.2.3.2)

Description of the Technology:

In the United States and worldwide, many efforts have been made to identify and implement mitigation options to reduce methane emissions from the natural gas sector (USEPA, 2003). For example, the Natural Gas STAR program is a voluntary partnership between US EPA and the oil and gas industry to identify and implement cost-effective technologies and measures to reduce methane emissions. The measures to reduce methane emissions from the natural gas systems can be grouped into the following mitigation strategies: prevention, recovery and re-injection, recovery and utilization, and recovery and incineration (Hendriks & de Jager, 2001).

During production, processing, and distribution, high-bleed pneumatic devices (powered by natural gas) will emit a high volume of CH₄ to the atmosphere (USEPA, 2004; IEA, 2003). Field experience shows that up to 80% of all high-bleed devices can be replaced with low-bleed devices that emit much lower volumes of CH₄ (Tingley & Fernandez, 2003).

Effectiveness: Good

Implementability: Good

Reliability: Good

Maturity: Good

Environmental Benefits: It reduces methane emissions.

Cost Effectiveness:

Technology	Lifetime (yrs)	MP (%)	RE (%)	TA (%)	Capital cost	Annual cost	Benefits
Replace high-bleed with low-bleed pneumatic devices ¹	5	50	86	8	\$14.01	\$0.00	\$8.21

Note: MP: market penetration; RE: reduction efficiency; TA: technical applicability; costs are in year 2000 US\$/MT_{CO₂-Eq.}

1: USEPA (2004) & CEC (2005)

Industry Acceptance Level: Good

Limitations: Only applicable to high-bleed pneumatic devices.

Sources of Information:

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